

AMENDMENTS TO THE SPECIFICATION:

Please add the following paragraphs before Claim 1 (i.e., as originally filed and partly reading: 1. A method and a system for integrating.....) and after the last paragraph (i.e., the last paragraph reading "XML-Contents could reference JSPs or CGIs from.....produced by said API."):

By practice of various embodiments of the invention there is provided a method and a system for integrating and coordinating resources, using the internet or intranets for synchronous and non synchronous communications, by displaying Content which may be data or reference to data that could be used by a resource. A resource may be any device(s), application(s), program(s), ActiveX, or embedded objects that could receive directly or indirectly commands to perform actions related to a Content.

The data could be static or produced live. The resources may be Content themselves. By abstracting communication resources as Content, a level of indirection is added allowing to handle a communication resource like any other Content (e.g., there is an abstraction of communication resources into Content). The display of Content is the process of building at run time, and sending for each party involved in the communication, a personalized order that when executed, sends commands directly or indirectly to the resources available for the respective party that will most closely match a

desired action. The mechanism of displaying Content provides a flexible framework to integrate any type of communication resource by using the resources in the best possible way as they exist (using of their existing interfaces). A command execution could entail setting properties, calling methods or functions, or triggering events in a resource. Instantiation of a resource with the respective parameters or arguments is also considered by sending or executing a command. Coordinating resources includes or refers to the fact that more than one of the resources could be involved in the displaying of the Contents, that the resources are not necessarily the same in all the parties involved in the communication, and is expressed in the complexity and uniqueness of each of the orders. By displaying Content it is possible to select in a dynamic, personalized, and programmable/configurable way the best resources in each of the communication tasks required or desired in communications.

By practice of other various embodiments of the invention there is additionally provided a method and a system that allows using the following four basic elements in the user interface: (i)Contents, (ii) sessions, (iii) users, and (iv) groups. Different kinds of relationships among those four elements are used to configure and manage the system. The parties involved in the communication are either users or sessions. Data is provided by servers; and session-Id is a key used at the server side to group all the resources connected directly or indirectly to any server from the same User or computer. It is a

function of any server integrated to the system to identify the session in a connection. Sessions are opened every time someone connects for the first time and closed after a timeout without any connection to any server integrated to the system. A user is a known individual. A session has established a relationship to a user when a session logs in. Virtual User accounts could be created for devices that do not have a relationship to real people. Opened sessions may be used for synchronous communications. Users may be used for non-synchronous communications, and groups may be groups of either users or sessions. Contents in relationship to sessions, users and groups modify their respective properties; and Contents in relationship to other Contents increase their complexity. Mentioned personalized orders are documents produced according to the sessions, users, groups, and Contents directly or indirectly involved in the communication and the system configuration. The system configuration refers to a table with information about what resources can handle what display-options, and a table of fallback that indicates in case there is no resource that can handle selected display-option, what display-option should be used next, or probably next, in matching the intended action. The display-option refers to a particular way the handling of the data should be done. The system configuration does not need to be changed, and therefore is not visible for a user of the system. Each of the servers updates the session to Content relationship data, so the history of a session in

relationship to each Content, including responses submitted for question-Contents, can be tracked.

Practice of further embodiments of the present invention provides a method and a system, where a browser becomes a bi-directional communication resource independent from the mechanism used to pull or push commands to the browser. Commands are embedded in the HTML responses for browser's requests, and are according to the browser's capabilities, like javascript and java enabled. Several options can be used to force the browser's request without a user's input. Some of the options are: (a) the use of HTML-Tag like <META HTTP-EQUIV="Refresh"> to pull the commands; (b) the use of an applet that maintains a connection to the system while (all the time) pushing commands in the following way: when the display order is built for a Session that indicates that there is an applet connection, it includes the command to the browser, and an additional command to the applet to execute showDocument() and force the Browser to request a page and therefore read the command; and (c) the use of an application that maintains a connection to the system pushing commands to the browser in the same way as in the applet but by executing a DDE pop-up instead of a showDocument(). All commands sent to the browser could be executed by just one retrieval of an HTML-page from the browser. The commands to the browser have a name, body and header, and when the commands are merged in the HTML-response, only one

body, and all the headers are added for all commands with the same name.

Practice of various embodiments of the invention provides a method and a system to transform orders at run-time where they could get a life of their own. The orders are XML documents that are executed by an XML-processor, and the orders are made out of nodes called "item." Items have integer, string and XPath (reference to nodes) variables, and could be global to the whole order, local to the item, and from a response document passing through the system. Items have a unique name attribute, and include OnExecute, OnResponse, and OnTimeout nodes that are executable.

The execution of the executable nodes deals with the Update, CallItems, and Evaluate/Otherwise nodes. CallItems carry a list of the names of the items that should be executed. Evaluate/Otherwise allows the comparison between variables (greater than, less than or equal to), which if true, then the children of the Evaluate are executed recursively, and which if false, the children of the Otherwise node are executed recursively. The Update node carry information to perform operations of variables, mathematical (+, -, *, /, =), string (+, =) and node operations like replace, delete, add and copy. Node operations could modify the order itself. OnExecute is executed when the order is received if its parent item is of type start, or if its parent item's name is in the CallItems list. At execution, the item is transformed with the XSL indicated in the SendTransform and sent on the channel

indicated on SendTopic nodes. The XML-Processor waits for a response only if there is a ResponseTimeout and a ResponseId for the executed Item. An Item waiting for a response becomes a task. OnResponse is executed when a document passing through the system matches the ResponseId's XPath list of the task. OnTimeout is executed if there is not a response after time indicated in ResponseTimeout is elapsed.

By practice of various embodiments of the invention there is also provided a method and a system to handle events using Content. The events are any documents processed by the XML-Processor. The system performs, and the method comprises, the steps: (a) enrolling the EventListeners by using the XML-Processor interface and passing an XML-header, an XPath list, a reference to an XSL-Content, and a reference id; and (b) transforming the document together with the XML-header with the XSL-Content into an order, when all the XPath in the list return valid when applied to the document passing through the system. The order includes commands to the required resources and server side components to handle the event. The method and system allows to have in general any Application monitoring the system comprising the step of creating all XSL-Contents needed to transform the Events to be monitored. The application creates a channel to communicate and a thread to process the messages received in the channel. The application enrolls the EventListeners with the respective XSL-Content reference, XML-Header, XPath list and

reference id, and the application handles the commands received in the opened channel product of the orders produced when the events are detected. The methods and systems allow in particular to have an OnEvent handler for HTML pages, which means that with a browser that is JavaScript and frames enabled, an HTML page could be updated according to events without the need of reloading the whole page. The method further comprises the step of creating all XSL-Contents needed to transform the events to be monitor. Every time the page is requested, all the required EventListeners are enrolled with the respective XSL-Content reference, XML-header, XPath list and reference id. The XSL-Content produces orders with commands for the browser that include JavaScript functions that, when executed in the frame that receives the commands, change the page loaded in another frame. Every time the page is unloaded, the EventListeners are removed with the respective reference id.

By practice of various embodiments of the invention there is provided a method and a system for caching Content. With a client Application the following is performed: (a) the client Application connects to a server integrated to the system and identifies the user it belongs to; (b) the client Application uses the connection to check periodically in the list of Contents posted for the user, and in the list of Contents to be synchronized in the groups where the user belongs to, for Contents to be downloaded; (c) the client Application starts the

downloading of the Contents, if not found or out of synch in the local machine; and (d) the XML-Builder produces a display Order for the user, such that when the user's client Application is connected and the Content is cacheable, will indicate to the resource to retrieve the data from the user's local client Application and not a remote server. The client Application is able of retrieving the Content's data from the server at the same time the data is sent to the resource; and the client Application could enroll EventListeners, so that it starts caching Contents at the moment they are posted and ready for when they are requested.

Further practice of embodiments of the invention provide a method and system for automatic handling of sessions connected to the system according to the display of Contents in specific rolls in the different relationships to groups, sessions, users and other Contents. Events could trigger the displaying of Content in the rolls; and by using Conditional-Content in the rolls it is possible to personalize and add intelligence to the interaction between the system and the session. The Conditional-Content carry information regarding an SQL statement, the database to apply the statement and an XSL-Content reference to transform the SQL result. The SQL result, an XML document, is transformed with the XSL producing a document that contains a list of Contents. The list of Contents replaces the Conditional-Content with relevant information at run-time; and the display of an XSL-

Content could entail the creation of orders. The interaction could refer to, but is not limited to: (a) transferring Sessions; (b) notifying Users that someone wants to communicate; (c) notifying Sessions that: (i) they are on hold, (ii) have been accepted to a Group, (iii) please leave a message, (iv) sorry I am busy, (v) please call later, and many others; (d) sending questionnaires; (e) displaying other Contents according to responses to questionnaires; (f) displaying Content according to information stored in the database; and (g) processing payments.

Further practice of embodiments of the invention provides a method for managing communications with a Multidimensional Matrix where participants (sessions, users and/or respective groups), Contents and their respective relationships through time are represented. Also provided is a method for organizing objects in three distinct sections corresponding to the relationships between a list of sessions and a list of Contents, or a list of Users and the list of Contents (all as broadly illustrated in Figure 7) which is used as a point of entry to the Multidimensional Matrix. The sections include Header/Column, Row/Reference, and Row/Column. The objects according to their embodiment and alignment provide information and can be used to trigger actions. The Header/Column section further comprises a plurality of Header/Column-n sub-sections. The embodiment of the objects in the sub-section provides information related to Content-n and can be

used to trigger actions related to Content-n.
Content-n involves all the Sessions and involves all
the users related to the sessions. The Row/Reference
section further comprises a plurality of Row-
m/Reference sub-sections. The embodiment of objects in
Row-m/Reference sub-section provides information
related to Session-m and can be used to trigger
actions related to Session-m, and, if Session-m is
logged in, provides information related to the
respective user and trigger actions regarding the
user. The Row/Column section further comprises a
plurality of Row-m/Content-n sub-sections. The
embodiment of the objects in Row-m/Content-n sub-
section provides information related to the
relationship of Session-m with Content-n and can be
used to trigger actions related to that specific
relationship, and, if Session is logged in, provides
information related to the relationship of User-m with
Content-n and can be used to trigger actions related
to their respective relationship. The Row-m/Content-n
sub-section is aligned to the respective Row-
m/Reference and Header/Content-n sub-sections.

In the case of users instead of sessions, objects
could be placed in the three distinct sections in
relationship to the Users. The sections include
Header/Column, Row/Reference, and Row/Column, wherein
objects according to this embodiment and alignment
provide information and can be used to trigger
actions. The Header/Column section further comprises a
plurality of Row-m/Content-n sub-sections The
embodiment of the objects in the Row-m/Content-n sub-

section provides information related to Content-n and can be used to trigger actions related to Content-n, Content-n involving all the Users and Content-n involving all the Sessions that are open for respective Users. The Row/Reference section further comprises of a plurality of Row-m/Reference sub-sections. The embodiments of objects in the Row-m/Reference sub-section provide information related to User-m and a plurality of Sessions related to User-m, and can be used to trigger actions related to the User-m and the Sessions. The Row/Column section further comprising of a plurality of Row-m/Content-n sub-sections. The embodiment of the objects in the Row-m/Content-n sub-section provides information related to the relationships of User-m with Content-n and the relationships of a plurality of Sessions related to User-m with Content-n. The objects in the Row-m/Content-n sub-section can be also used to trigger actions related to their respective relationship. The Row-m/Content-n sub-sections are aligned to the respective Row-m/Reference and Header/Content-n sub-sections.

In further embodiments of the invention, the method and system identifies and obtains information about sessions, users connected at the moment and/or in the past. The method of organizing objects could be applied to an active or closed session, or a user, and any to all the Contents it has had a relationship with. The plurality of Row/Content-n sub-sections link to information related to the relationships of the session and/or user with each Content. The plurality

of Row/Reference sub-sections link to all sorts of information related to the session and/or user.

Further embodiments of the invention provide a method for calculating final grades using Content based on the value-weight that can be entered for each Content-child of a Content. The grade for a specific Question-Content can be set manually or automatically. The final grade is obtained with the result of a recursive evaluate function that has as parameters the maximum score, the Content and the Session for whom the final grade is calculated. The function first adds all the value-weights of the children of the first generation (direct children) in to a total-value-weight, then for each of the Child Contents checks if it has more children. If the child Content does have more children, a result of a recursive call to the evaluate function is added to the final grade. The recursive call gets the respective value-weight divided by the total-value-weight and multiply by maximum score as the new maximum score, the Content Child and the Session. If the Content Child does not have more children, the value-weight divided by the total-value-weight, and multiplied by the score for respective Content and Session is added to the final grade.

In additional embodiments of the invention, there are users instead of sessions, and the grade would be calculated base on sessions related to the users and a

selection criteria for the sessions in relationship to
respective Content based on, but not limited to: (i)
the session with the last relationship to the
respective Content; (ii) the session with the
relationship to respective Content with the best
score; (iii) the Session with a relationship the
respective Content where the response was entered in a
specific date range; (iv) the session chosen based on
a combination of previous criteria; and (v) an average
of all sessions with a relationship to respective
Content.

Practice of additional embodiments of the present
invention provide a method and a system to set rules
for users to post any type of messages using Content.
A User can receive messages according to the following
address structures: x.u.p@server; x.u@server; or
x@server, wherein x, u, p are strings of any length of
any characters or numbers not including special
characters defined in the configuration file; and x
refers to the User-account field for the record of the
User receiving the message; u refers to a unique
Content in a specific roll for the User sending the
message; and p refers to an additional Content in the
same roll for the User sending the message. The
identity of the receiver is defined by the unique
identifier x, and the identity of the sender is
defined by the unique "u" or "u" and "p" strings. In the
case of emails and SMTP servers, the address structure
may be taken literally. In case of other servers the
address structure may not be taken literally. For

example, in the case of a voice mail "x" refers to a phone number/extension, "u" and "p" are gathered through DTMF, by pressing additional keys after respective prompts and the server is the voicemail system itself. The server receiving the message gathers additional information from the connection, or the message itself. The identity of the sender could be also established with the mentioned additional information, such as the senders email address or caller id. A message could be classified in three different ways: as coming from a known User, a not known User or an invalid identification. Content-Mailboxes are set to receive messages according to the identity of the sender and receiver, the mentioned three classifications, and the mentioned additional information gathered by the server. The Content-Mailboxes hold information on how to handle the message particularly in regards to accepting, or rejecting the message, and penalizing the connection by delaying the final termination. Posting messages to the Content-Mailboxes could trigger events that could be used to notify target user live, and in the case of bidirectional communications, he/she could display specific Content to "answer"/establishing a synchronous communication. Content-Mailbox in specific rolls for a User establish the permissions to see/retrieve or not to see/retrieve the message. By placing a message in a Content-Mailbox that is not accessible to be read, or is not read, is a way of filtering out messages.

By the practice of additional embodiments of the invention, there is provided a method and a system for users to send and receive any type of communications based on Content. The users can communicate according to the following address structures: $x_{(1..n)} \cdot u_{(0..n)} \cdot p_{(0..n)}$ @server, $u_{(0..n)} \cdot p_{(0..n)} \cdot x_{(1..n)}$ @server, $u_{(0..n)} \cdot x_{(1..n)} \cdot p_{(0..n)}$ @server or in any other order, and wherein x, u, p, '.' and 'server' refer to Content(s). The address structure itself allows the identification of the sender and the receiver in contrast to traditional methods and systems where an address identifies only either the receiver or the sender, and in some cases relies only on the good faith of the sender to identify him/herself. The mentioned identification allows a personalized handling of the communication which could include acceptance or rejection of the messages. The methods and systems for embodiments of the present invention do not require any changes in current systems used for communications. Current systems could require different handlers for the communications and any of the handlers involved could record the address for their own usage and/or profit. The address structure(s) for various embodiments of the invention allows/allow inclusion of clear warnings by society indicating permission or prohibition of recording address to any of mentioned communication handlers. The method and system allows the creation of laws that establish punishment for not respecting users wishes.

For additional embodiments of the invention the identity of the receiver is established by an unique

identifier Content 'x', and the identity of the sender is defined by the Contents 'u'; wherein Contents 'p' provide additional information like the mentioned warning messages or for further processing of the communication. In the case of communications by email, the address structure may be taken almost literally. The Contents refer to strings of any length of characters not including the special characters defined in the Content '.' which is a Content that holds the data used to do the parsing of the different elements, wherein: (i) 'x' is the Content in an User-emailaccount roll for the User receiving the message; (ii) 'u' refers to a Content in a specific ID-roll for the User sending the message; (iii) the Content 'server' is the SMTP-DOMAIN name (email-server-name); (iv) 'p' could be any word or sentence like but not limited to 'PRIVATE' or 'PERSONAL' to indicate public warning, or 'URGENT' to handle message in an urgent way.

In case of other types of communications the address structure may not be taken so literally. For example, in the case of phone communication(s): (i) 'x' refers to a phone number/extension assigned to a User; (ii) 'u' and 'p' could be gathered through DTMF, or 'u' could be a Content that holds a Voice-Pattern for the User sending/starting the message/communication for his/her voice recognition and 'p' could be a sequence of numbers like "111" to indicate agreement by society that could mean "you better have an authorization to send this fax" (e.g., the prefix "800" means free).

In the case of postal communications, 'x_(1..n)' refers to the name and street address of the receiver, 'u' refers to any additional information like, but not limited to, a virtual box or apartment number, and 'p' refers to additional lines warning about the usage of the mentioned personalized virtual number.

In a security system in a large building, Contents could refer to keys, voice, face, eye recognition data that could identify visitor and host; wherein the door could open depending on visited host and not only on visitors established identity.

The Content "Mailboxes" in relationship to the User-Sender and/or User-Receiver set specific rules to handle the communications. The Content-Mailboxes hold information on how to handle the message particularly in regards to accepting or rejecting the message. The Content-Mailboxes could trigger Events that could be used to start any type of personalized processes as previously mentioned.

Practice of additional embodiments of the present invention provides a method and a system to manage appointments using the Internet based on Content, Users and Groups. The person asking for an appointment and the person giving an appointment have User accounts created in the system. Users providing appointments build schedules for different types of appointments. The schedules for appointments are made based on Users giving appointments, the type of appointment, date range, time range and special dates.

A relationship between a Group(s) and an XML-Content that represents the schedules gives the Users belonging to the Group(s) access to the schedules. The view of the schedule can be displayed using the XML-Content, XSL-Content to transform the output and the User requesting the appointment and related Contents. Different types of servers could use same XML-Content and respective XSL-Content to display a same schedule in their respective formats (e.g., HTML or WML). The relationship between a Group(s) and an XML-Content that represents the schedules gives the Users belonging to the Group(s) access to the schedules.